

## **REMARKS**

In the Office Action, the Examiner took the following actions:

objected to the abstract;

rejected claims 9-13 under 35 U.S.C. § 112, second paragraph, as being indefinite;

rejected claims 9, 12, and 13 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,413,802 to Hu et al. ("Hu");

rejected claims 10, 11, and 13 under 35 U.S.C. § 103(a) as being unpatentable over Hu in view of U.S. Patent No. 6,525,403 to Inaba et al. ("Inaba"); and

rejected claims 9-13 under 35 U.S.C. § 103(a) as being unpatentable over Inaba.

Claims 1-8 and 14-20 stand withdrawn; claims 10, 11, and 13 are canceled; and claims 9 and 12 remain under examination.

### **Applicant's Amendments**

Applicant has deleted the Abstract and substituted the attached replacement Abstract in response to the Examiner's comments at page 2 of the Office Action. Applicant respectfully requests that the Examiner approve and enter the replacement Abstract and withdraw the objection to the abstract.

Applicant has also amended claim 9 to incorporate subject matter recited in canceled claims 10 and 13. Claims 10, 11, and 13 are canceled without prejudice or disclaimer of their subject matter.

### **Regarding the Rejection under 35 U.S.C. § 112, second paragraph**

Applicant respectfully traverses the rejection of claims 9-13 under 35 U.S.C. § 112, second paragraph, for allegedly being indefinite. However, in order to advance prosecution of this application, Applicant has amended claim 9 to recite a "fin silicon

layer,” consistent with the Examiner’s suggestion at page 2 of the Office Action. Claim 12 depends from claim 9 and does not separately recite the phrase “fin-type.” Claims 10, 11, and 13 are canceled rendering the rejection of these claims moot. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection under 35 U.S.C. § 112, second paragraph.

Regarding the Rejection under 35 U.S.C. § 102(b)

Applicant respectfully traverses the rejection under 35 U.S.C. § 102(b) of claims 9, 12, and 13 as being anticipated by Hu.

In order to support a rejection under 35 U.S.C. § 102, each and every element of each claim in issue must be found, either expressly described or under principles of inherency, in that single reference. Furthermore, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” See M.P.E.P. § 2131, quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Hu fails to teach each and every element recited in claim 9. Amended claim 9 recites “a width of the second impurity region is smaller than a thickness of the mask material, and an impurity concentration in the first impurity regions is higher than that in the second impurity regions.” The Examiner concedes that Hu fails to teach at least these elements previously recited in canceled claims 10 and 13. Office Action at 4.

Accordingly, Hu fails to disclose each and every element recited in claim 9 and therefore does not anticipate claim 9. Claim 12 depends from claim 9 and is allowable over Hu at least due to its dependence. Claim 13 is canceled, rendering the rejection of

this claim moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw the rejection of under 35 U.S.C. § 102 based on Hu.

Regarding the rejections under § 103

Applicant respectfully traverses the rejection of claims 10, 11, and 13 under 35 U.S.C. § 103(a) as being unpatentable over Hu in view of Inaba. Claims 10, 11, and 13 are canceled rendering the rejection of these claims moot. Accordingly, Applicant requests that the Examiner withdraw the rejection of claims 10, 11, and 13.

Applicant respectfully traverses the rejection of claims 9-13 under 35 U.S.C. § 103(a) as being unpatentable over Inaba. No *prima facie* case of obviousness is established based on Inaba.

To establish a *prima facie* case of obviousness, three basic criteria must be satisfied. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine references. Second, there must be a reasonable expectation of success. Third, the prior art reference (or references when combined) must teach or suggest all of the claim elements. See M.P.E.P. § 2143. Moreover, the requisite teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). See M.P.E.P. § 706.02(j).

Inaba fails to disclose:

first impurity regions, the first impurity regions being source/drain diffusion regions, formed a prescribed distance apart from a region corresponding to the gate electrode of the fin silicon layer; and

second impurity regions formed between the first impurity regions of the fin silicon layer and the region corresponding to the gate electrode

(emphasis added), as recited in claim 9.

At page 5 of the Office Action, the Examiner asserts that Inaba “shows gate 14 on gate insulating 13 and mask 22 over source drain 17 and impurity regions 13 . . . . The relative concentrations of the impurity regions are also shown, e.g., Fig. 8-13, regions 13, 42, 43, 44, and 17.” The Examiner appears to associate the claimed “first impurity regions” and “second impurity regions” with some combination of p<sup>+</sup>-type layer 42, n<sup>-</sup>-type layer 43, p<sup>-</sup>-type layer 44, and p<sup>+</sup>-type doped regions 17. Id. As acknowledged by the Examiner, reference number 13 identifies a gate insulating film and therefore does not identify an impurity region.

Inaba discloses p<sup>+</sup>-type layer 42, n<sup>-</sup>-type layer 43, p<sup>-</sup>-type layer 44, and p<sup>+</sup>-type doped regions 17. Layers 42,44 are optimized doping layers used to form a depleted region in layer 43 and to provide isolation between layer 44 “in which [a] channel is formed.” Column 11, lines 56-62. Layers 17 merely allow the “device to operate as a four-terminal device.” Col. 11, lines 51-55.

However, to the extent that layers 42-44 and 17 correspond to “first impurity regions,” Inaba fails to teach “first impurity regions being source/drain diffusion regions,” as recited in claim 9. Accordingly, the reference cannot teach “first impurity regions being source/drain diffusion regions . . . and second impurity regions formed between the first impurity regions of the fin silicon layer and the region corresponding to the gate electrode,” further recited in claim 9. Thus, no *prima facie* case of obviousness is established with respect to claim 9 based on Inaba because the reference fails to teach each and every element recited in claim 9.

Furthermore, the Examiner contends that one of ordinary skill in the art would somehow combine these elements as disclosed by Inaba in their various configurations of the second, third, and fourth embodiments shown in Figs. 8-13. Id. Applicant respectfully disagrees.

The second, third, and fourth embodiments correspond to mutually exclusive device structures. More particularly, Inaba characterizes the second embodiment by stating that it “is intended to prevent the occurrence of punch-through between source and drain . . . by preventing the channel from being formed in the top surface of the substrate projection, i.e., by using only the side surfaces of the projection as the channel.” Col. 7, lines 1-9. Inaba characterizes the third embodiment as a MISFET “which uses a thick substrate projection in which . . . the channel region and its neighborhood are made small in thickness, whereas the region in which the source and drain are to be formed are made large in thickness.” Col. 9, lines 48-55. Inaba characterizes the fourth embodiment as a MISFET that includes “an intrinsic pillar as a substrate projection and then forming a stacked channel structure of stacked  $p^+/n^-/p^-$  layers.” Col. 10, lines 58-64.

Applicant cannot find any teaching or suggestion in Inaba for combining the features of these clearly mutually exclusive embodiments and therefore asserts that a person of ordinary skill would not have been motivated to modify the teachings of Inaba in the manner proposed by the Examiner.

Assuming *arguendo* that the Examiner’s characterizations of the elements of Inada are correct, and Applicant does not agree that they are, Fig. 8 of Inaba fails to disclose “an impurity concentration in the first impurity region is higher than that in the

second impurity region.” Fig. 12 of Inaba fails to disclose “mask material formed on the fin silicon layer.” Furthermore, none of the other drawings relied upon by the Examiner, i.e. Figs. 9-11 or 13, of Inaba teach or suggest each and every element recited in claim 9. For example, the Examiner also concedes that Inaba fails to teach or suggest the claimed “fin silicon layer formed on a semiconductor substrate,” as recited in claim 9. Office Action at 5.

None of the figures of Inaba relied upon by the Examiner show each and every element recited in claim 9. Instead, the Examiner contends that one of ordinary skill in the art would have modified Inaba in order to reach the claimed “fin silicon layer formed on a semiconductor substrate,” and the “width of the second impurity region is smaller than a thickness of the mask material, and an impurity concentration in the first impurity region is higher than that in the second impurity region,” as now recited in claim 9. Office Action at 5. However, the Examiner has failed to identify a suggestion or motivation from Inaba which would support such a combination.

Applicant respectfully submits that no such teaching is available because the disclosure of Inaba fails to suggest the Examiner’s proposed combination. No *prima facie* case of obviousness is therefore established based on Inaba because there is no suggestion or motivation taught by the reference to combine the elements in the Examiner’s proposed manner. Claim 9 is allowable for least this additional reason.

No *prima facie* case of obviousness is established based on Inaba with respect to claim 9 because the reference fails to teach or suggest each and every element recited in claim 9 and because there is no suggestion or motivation to combine the elements taught by Inaba in the Examiner’s proposed manner. Claim 12 depends from claim 9

and is allowable at least due to its dependence. Applicant requests that the Examiner reconsider and withdraw the rejection under § 103(a) based on Inaba.

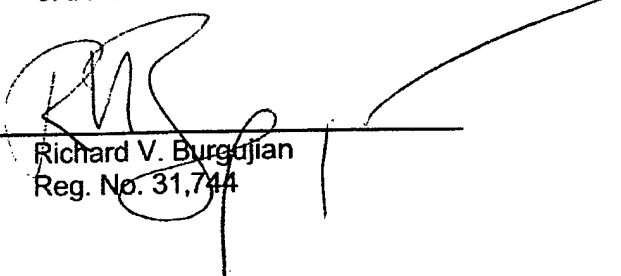
In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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